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THE DISTRIBUTION AND MIGRATION OF THE HUDSONIAN CURLEW

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THE records of the Hudsonian Curlew, *Phaeopus hudsonicus*, show a discontinuous distribution with widely separated migration routes and wintering grounds. The following are the breeding localities that have been definitely reported: Norton Sound, Cape Blossom, Kowak River, Camden Bay (Bent, 1929), Mount McKinley (Dixon, 1938), probably Hooper Bay, Alaska (Conover, 1926), Collinson Point and the Mackenzie delta regions (specimens in National Museum of Canada), and the Anderson River (Preble, 1908) in the Canadian Northwest Territories. There are no reports of the species, breeding or otherwise, between Anderson River and the west coast of Hudson Bay, though the intervening country has been surveyed closely enough that so conspicuous a bird could hardly have been overlooked were it present (Clarke, 1940). It breeds commonly at Churchill (Taverner and Sutton, 1934) and on reasonable evidence can be assumed to do so on Southampton Island at the mouth of the Bay (Sutton, 1932, p. 120). Between these two points along the Bay coast A. E. Porsild noted the species in summer on the Tha-Anna River just north of the Manitoba line (Clarke, 1940). From the southwest shore of the Bay at Severn the Royal Ontario Museum has a July 3 specimen with incubation patches which would seem to indicate local breeding. Northward there are sporadic individual records, but without breeding evidence, from the Melville Peninsula (R. W. Bray, MS) and Arctic Bay, north Baffin Island (specimens in the National Museum of Canada).

Nothing is known of the bird on the east side of Hudson Bay, most of which has received close preliminary examination. It is largely a coastal marine species and is rarely seen on fresh water or away from the sea. The only interior breeding record is in the Mount McKinley region, Alaska, reported by Sheldon (1909) and Dixon (1938). Though it seems to have local, isolated, community-breeding associations rather than a widely connected nesting range, there is no evidence that it breeds in the great *terra incognita* of the interior of the Ungava Peninsula.

On the Pacific side, migrants are not generally common on Bering Sea or southern Alaska coasts except at Sitka and near Juneau where

Willett (1914) and Bailey (1927) report them as regular migrants. There are individual records for Haines and Chilkat Inlet in early June (Bishop, 1900); Atlin, British Columbia, in May and June (Swarth, 1936); Circle, Alaska, and the Ogilvie Range, Yukon Territory, in July (Osgood, 1909). It has not been reported south of these localities until we reach Vancouver Island, where it is more or less regular though not numerous (Brooks and Swarth, 1925). Along the Washington (Bowles, 1918) and California coasts, and in the Sacramento and San Joaquin Valleys its numbers increase (Grinnell, 1915 and 1928). This western group winters from Lower California to Chile (Murphy, 1936, pp. 247, 275). These occurrences seem to indicate a main interior movement through the Yukon, across the base of the Alaska Panhandle and an overseas jump to Vancouver Island whence it follows the coast southward. The spring and fall routes are substantially the same. How the Mount McKinley and Hooper Bay birds go and come is uncertain.

The Atlantic migration is more complicated and follows different routes in spring and fall. The Hudsonian Curlew is powerful on the wing and quite capable of making long sustained flight. Its staple food in the north is the low-lying fruit of the subarctic barrens, particularly the crowberry (*Empetrum nigrum*) on which it gorges. Farther south the fiddler crab of the sand beaches seems to be its main food (Wayne, 1910). Its migrations are probably largely governed by the presence of these or similar foods. Where they are absent along travelled routes the birds are likely to pass over or pay only occasional visits in case of necessity. Under these conditions numbers may pass over uncongenial territory and be noted only occasionally.

The principal data on the eastern migration are:

Northern Labrador.—Several flocks at the mouth of the Koksoak River, but do not halt above Davis Inlet (Turner, 1886). "Not common migrant in late summer, but said to appear annually in small flocks, and often in rather large flocks" (Hantzsch, 1928). That author is a little uncertain as to the species observed but it was undoubtedly the Hudsonian rather than the Eskimo Curlew, the only alternative.

Outer Labrador coast.—"An uncommon late summer and autumn transient in Labrador, passing in small flocks" (Austin, 1932). At Henley Harbor, a few, most numerous about September 1 (Coues, 1861).

Head of James Bay.—"Unknown to me as a breeding bird in the Labrador Peninsula. I have a few fall specimens from the south end of James Bay, that is all" (Todd, letter March, 1941). In 1922, W. G. Walton, for twenty-five years missionary on the east side of James Bay, reports "The Curlew, large and small, left our district about 1885."

Gulf of St. Lawrence.—The writer has found it in considerable numbers (flocks up to 300) in late July and in August on the North Shore from the Moisie River to Natashquan and it undoubtedly occurs farther eastward. "Occurs irregularly in large numbers in Anticosti Island"

(Lewis, 1924). "An abundant August and September migrant in the Magdalen Islands" (Bishop, letter, 1910). Well known to shooters on Miscou Island, who, supported by specimens (National Museum of Canada, fall dates), state that it comes in large flocks, feeding on the tidal flats and the berries of the "barrens". In Prince Edward Island, "A not uncommon summer visitor" (McSwain, 1908).

New Brunswick.—E. F. G. White of Ottawa, a competent ornithological sportsman, reports that he has had excellent Hudsonian Curlew shooting in fall at Tabusintac near the mouth of the Miramache River.



Figure 1. Hudsonian Curlew and nest at Churchill, Manitoba, June 22, 1940. Photograph by Ralph S. Palmer.

A fairly common migrant on Grand Manan with July and August dates given (Pettingill, 1939).

Nova Scotia.—"Hundreds occur locally in Cape Breton and Richmond counties and along the southwest shore of mainland during July and August of each year" (R. W. Tufts, MS, 1937).

Newfoundland.—Reeks (1870) mentions it as occurring along with great numbers of Eskimo Curlew though there has been no verification of these records since. Proper dates of recent observation are lacking but it probably still occurs on the unvisited barrens.

New England and southward.—Along the New England and central Atlantic states coasts from many accounts (Forbush, 1925 and others) it appears to be an irregular fall visitor on occasions when forced in by

stress of weather or other circumstances. From Cape May, New Jersey (Stone, 1938, pp. 416-432) southward it occurs more or less regularly in the spring and fall. A few may winter in South Carolina (Sprunt and Chamberlain, 1931), Florida (Howell, 1932), and Louisiana (Oberholser, 1938), but the bulk seem to pass over the West Indian islands with only occasional stops, to the Guianas and the mouth of the Amazon. On northward migration it seems to follow the same route, but disappears from the coast at about Cape May, New Jersey, reappearing regularly on Lakes Erie and Ontario, the only regular inland record for the species en route to northern breeding grounds. Here, with striking regularity about May 24 each year rather large flocks are briefly seen in passage. In evidence of this, W. E. Saunders writes (March 21, 1941): "It is well known that these birds pass up in considerable numbers each year about May 24. At Komoka (near London, Ontario) six or eight years ago there were several flocks totalling 200 or so. Three or four years ago we saw 75 on Lake Erie at Rondeau . . . I think that anyone who will go to Rondeau for a week about then would see a goodly number. I get them on my list every year." Of the Toronto region Fleming (1906) says: "Regular migrant, not common, May 27-July 2," that the old birds return early in July and the young from September 1 to 15, but are very rare. Records supplied by the Royal Ontario Museum of Zoology amply support this statement, citing many May occurrences, often in considerable number, and a few small groups and individuals in July and later. J. A. Munro (in Bent, 1929) reports a flight of passing flocks near Toronto totalling over a thousand birds May 24-26, 1910. E. Beaupre (*loc. cit.*) states that Amherst Island at the foot of Lake Ontario is a favorite crossing place for the species in their northward flight and that May 24 is the date upon which they can be looked for, passing in one large flock. The writer has met with small flocks of the species at Point Pelee at the west end of Lake Erie near the end of May and has observed individuals there in July. There are also circumstantial reports that it regularly occurs in large numbers each May 24 on Middle Island in Lake Erie. West of southern Ontario we have no specific records until we reach southern Manitoba and southern Saskatchewan, where occasional single occurrences are reported. There appears to be a slightly stronger flight of the species through western Alberta, where it seems to be gradually increasing in numbers. Frank Farley (letter, August, 1941) reports their occurring regularly now in numbers near Camrose. He states that this undoubtedly marks a recent increase and is not a case of their having been previously overlooked. All of these records are in the spring and all tend to concentrate about the date of May 24. The frequent repetition of this date at widely spread localities in the migration records of this species shows not only a remarkably constant timing, but the speed and concentration with which the spring passage is made. Northward, occasional records point to the continuation of this flight line up the Mac-

kenzie Valley to the Anderson River breeding grounds.

Elsewhere in the interior, as along the Mississippi Valley fly-way, this curlew appears only as an occasional straggler, though earlier reports suggest that it may at one time have been more common there



Figure 2. The breeding and wintering grounds and migration routes of the Hudsonian Curlew. The broken line traces the hypothetical former migration route, extirpated in recent times.

(Cooke, 1888). However, it is perhaps significant that Cooke did not repeat this statement in his later report (Cooke, 1910). Many of the older writers confused the three curlews and made numerous misidentifications which may be the cause of the discrepancy between past and

present reports, but there may have been a real change in the status of the species in the region. On the gulf coast of Louisiana the species is a more or less regular migrant with lingerers in winter and summer (Oberholser, 1938). We have seen a considerable series of specimens (Fleming collection), and Griscom and Crosby (1925) report a similar group in the Dwight collection all taken from one lot by different collectors on or near May 24, 1902, at Brownsville, Texas. In the same locality Friedmann (1925) calls it "uncommon" and Griscom and Crosby term it "a rare and little known transient." It therefore seems to be of sporadic and irregular occurrence at this point on the Gulf coast, probably off its regular line of migration.

From these data it seems evident that the Hudson Bay birds on leaving their northern breeding grounds make more or less directly for the berry-laden barrens on the Gulf of St. Lawrence. Some, probably the Southampton or northern contingent, strike eastward and are the birds that Turner and Hantzsch report at the north tip of Labrador. Thence they probably fly south over the berry tundras of Ungava. Others, presumably the group from Churchill and west of Hudson Bay, migrate southward to the end of James Bay and thence overland to the same destination. Uniting and moving to Nova Scotia the two groups strike to sea, not making landfall except under stress of circumstances, to the Cape May region, whence they follow the coast to Florida and make the crossing to South America by sustained flight. The spring return reverses the flight as far as Cape May, where it turns inland and by single flight reaches the shores of Lakes Erie and Ontario as described. Here the stop is but momentary and flight is quickly resumed, hence the infrequency with which it is observed. The last lap may be broken at or beyond James Bay or may be continuous to the ultimate individual nesting stations.

There may possibly have been a third flight group up the Mississippi Valley, through Alberta and the Mackenzie Valley to now unoccupied grounds on the coast east of the Mackenzie River. The individuals of this flight may have been nearly extirpated along with the Eskimo Curlew and may now be, as we hope, slowly recovering (see Farley above). This is purely speculative and has only a degree of probability in support.

Thus, we now have two distinct groups of Hudsonian Curlew that in breeding, migration, or wintering, have no or little opportunity for meeting. This provides an isolation that might be productive of sub-specific specialization. With this in mind, the writer has critically examined significant samples of the two groups.

Through the courtesy of Mr. L. L. Snyder of the Royal Ontario Museum of Zoology, 68 specimens were borrowed for personal examination and Dr. Josselyn Van Tyne of the University of Michigan Museum of Zoology was kind enough to measure for me some 54 specimens under his charge. These, with those available in the National Museum of

Canada, provided 143 fully sexed and pertinent birds for examination and comparison. These were divided into eastern and western groups as tabulated below. Geographically intermediate specimens were not used in this comparison.

EASTERN	WESTERN
Chesterfield Inlet	North Alaska Coast
Churchill	Mackenzie Delta
Labrador	Vancouver Island
Southern Ontario	California
Gulf of St. Lawrence	Oregon
Nova Scotia	Costa Rica
New Hampshire	Ecuador
New York	Peru
Maryland	Chile
Virginia	
South Carolina	
Florida	
Total—97 specimens	Total—46 specimens

A careful comparison of these two groups, sex for sex, revealed no significant differences in either plumage or in measurement of wings or culmen. In the latter case care was taken to include only spring birds, those known to be at least a year old and whose bills could be assumed approximately to have reached mature growth. That these two physically isolated groups of the species had not appreciably diverged suggests that their separation may have been comparatively recent, perhaps within historical times, possibly the result of the extirpation of a connecting population along with the Eskimo Curlew as suggested previously.

SUMMARY

There are two distinct populations of Hudsonian Curlew, breeding, migrating, and wintering on opposite sides of the American continents. A western group migrates up and down the Pacific coast, apparently passing overland across the base of the great Alaskan peninsula to northwestern breeding grounds. The spring and fall routes are substantially alike. The eastern group follows up the Atlantic coast to the vicinity of New Jersey whence it passes inland, stopping regularly, but momentarily, on the lower Great Lakes and thence to breeding grounds west of Hudson Bay. On the return trip birds make their way either by James Bay or through the interior of Ungava to the Gulf of St. Lawrence and to Nova Scotia and then over sea to the New Jersey region and southward along the coast. Though these two populations seem never to have opportunity of meeting and mixing, no racial distinction is detected between them and their separation seems to have been of comparatively recent date. We suggest that there may originally have been a Mississippi Valley group connecting the two breed-

ing areas in the north but which was recently extirpated—perhaps along with the Eskimo Curlew, with which the species seems to have been closely associated in migration.

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